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BEFORE THE

Federal Communications Commission

WASHINGTON, D.C. 20554

In the Matter of	)	
	)	
VIRTUAL GEOSATELLITE, LLC	)	RM - _____
	)	
Petition for Rule Making To Make	)	
Available C-Band Spectrum	)	
for Non-Geostationary Fixed-Satellite	)	
Service Gateway Operations in the U.S.	)	

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

To: The Commission

PETITION FOR RULE MAKING

Virtual Geosatellite, LLC ("Virtual Geo"), pursuant to Section 1.401 of the Commission's rules,[1] hereby petitions the Federal Communications Commission ("FCC" or "Commission") to initiate, to the extent that it may be necessary, a rule making proceeding to make spectrum in the bands 5925-6725 MHz (Earth-to-space) and 3.7-4.2 GHz (space-to-Earth) available for use by gateway links for non-geostationary ("NGSO") fixed-satellite service ("FSS") systems. Both bands are currently allocated to the FSS in the directions indicated in the United States and internationally.

Virtual Geo takes this step because, although NGSO/FSS satellite systems can operate in the identified "C-band" FSS frequencies, as long as they do not cause unacceptable interference to geostationary ("GSO") satellites in the FSS pursuant to ITU Radio Regulation

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[1] 47 C.F.R. § 1.401 (1998).

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S22.2,[2] the Commission's rules do not currently make specific provision for use of the C-band FSS frequencies by NGSO FSS systems. In the proceeding requested by Virtual Geo, the Commission should clarify that NGSO FSS systems have access to C-band spectrum, so that Virtual Geo and other potentially qualified operators of NGSO FSS systems can employ spectrum in these bands for vital gateway links for planned NGSO FSS systems without interfering with existing or future GSO FSS systems. Such a step will permit these service providers to introduce efficient and superior service, in addition to additional FSS competition, in the U.S. market and around the world.

I. BACKGROUND

Virtual Geo has filed an application with the Commission for authority to launch and operate a system of NGSO satellites in sub-geosynchronous inclined elliptical orbits to provide state-of-the-art, affordable, digital fixed-satellite services to users on all the major continental land masses and in the significantly-populated island regions of the Earth.[3] This design permits the satellites to be virtually geosynchronous with respect to particular points on the Earth. Virtual Geo's proposed "VIRGO™" system intends to utilize a combination of user and gateway links in the C- and Ku-bands, as well as intersatellite links in optical frequencies. All links in the C-band frequencies that are the subject of this petition would be gateway links.

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2 *See World Radiocommunication Conference-97*, Final Acts, Radio Regulation S22.2.

3 *See* Application of Virtual Geosatellite, LLC, filed January 8, 1999 ("Virtual Geo Application").

In both C-band and Ku-band, the VIRGO™ system's satellites will operate in a manner that is effectively transparent to the GSO FSS and GSO BSS networks, and to the fixed service systems, with which it will operate on a co-primary and fully compatible basis. Because VIRGO™ satellites are separated from the geostationary arc by at least 40 degrees at all times within the system's service areas, VIRGO™ not only fully protects current GSO FSS and BSS networks operating in the C- and Ku-bands, but it will leave them an effectively unfettered opportunity to evolve their technologies to meet future service requirements.

Authorization of VIRGO™ and similar NGSO systems that employ virtual geostationary satellite orbit ("VGSO") constellations will serve the public interest because such systems: (i) will promote the efficient use of the orbit spectrum resource by permitting the overlay in the same band of a novel non-geostationary satellite system design that operates in a completely transparent manner with respect to existing and future geostationary FSS and BSS satellites; and (ii) will provide new affordable digital services to small user terminals in most of the populated areas of the world.

Key to the success of these new VGSO-type NGSO satellite systems is the use of spectrum in both the Ku- and C-bands, where the ground and space segment components are readily available at low cost as a result of the very widespread existing usage of these frequency bands by GSO satellite systems throughout the world. However, the benefits of VIRGO™ and other similar NGSO satellites may be compromised if regulatory delays impede the ability of such systems to provide service in the FSS frequency bands. In this regard, the Commission has

already commenced a rule making proceeding to allow NGSO FSS operation at Ku-band.[4] If the Commission is to realize its goals of permitting NGSO FSS systems to operate co-frequency with GSO and terrestrial systems, the Commission must also make clear that NGSO satellite systems have access to the FSS spectrum not only at Ku-band but also at C-band for gateway operations. Therefore, Virtual Geo urges the Commission to amend its rules, to whatever extent amendment may be necessary, to authorize explicitly the operation of gateways in the C-band FSS spectrum by NGSO FSS systems.

II. TO THE EXTENT NECESSARY, THE COMMISSION SHOULD INITIATE A RULE MAKING TO PERMIT THE OPERATION OF NGSO FSS GATEWAYS AT 5.925-6.725 GHz AND 3.7-4.2 GHz

1. NGSO FSS Gateway Operation in the C-Band FSS Spectrum Will Facilitate the Provision of An Efficient and Pro-Competitive NGSO FSS Service

Virtual Geo's VIRGO™ system will utilize gateways to interconnect the traffic for user terminals (all of which will operate at Ku-band). To achieve its service objectives without the proliferation of an unacceptable number of gateways per service area, the VIRGO™ system will need to use spectrum for gateway operations at both C and Ku frequencies — specifically

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[4] *See* Amendment of Parts 2 and 25 of the Commission's Rules to Permit Operation of NGSO FSS Systems Co-Frequency with GSO and Terrestrial Systems in the Ku-Band Frequency Range and Amendment of the Commission's Rules to Authorize Subsidiary Terrestrial Use of the 12.2-12.7 GHz and by Direct Broadcast Satellite Licensees and Their Affiliates, *Notice of Proposed Rule Making*, ET Docket No. 98-206 (RM-9147, RM-9245) (released November 24, 1998).

within the C-band at the 5.925-6.725 GHz (Earth-to-space) and 3.7-4.2 GHz (space-to-Earth) frequency bands. Likewise, other NGSO systems -- particularly those which, like VIRGO™, operate with VGSO-type NGSO orbits -- would also be able to minimize gateway terminals and provide more efficient service to consumers by utilizing gateways operating at C-band.

2. ITU Regulations Allow NGSO FSS Gateway Operation

Under the Table of Frequency Allocations in Article S5 of the ITU Radio Regulations the 5.925-6.725 GHz band is allocated in all three ITU Regions to fixed, fixed-satellite (Earth-to-space), and mobile services on a co-primary basis. In the U.S., the 5.925-6.425 GHz and the 6.525-6.725 GHz bands are allocated only to fixed and fixed-satellite (Earth-to-space) services on a co-primary basis, while the 6.425-6.525 GHz band is allocated to fixed-satellite (Earth-to-space) and mobile services also on a co-primary basis.

Internationally, under the ITU Radio Regulations, the 3.7-4.2 GHz band is allocated in Regions 2 and 3 to fixed, fixed-satellite (space-to-Earth), and mobile services, except for aeronautical mobile, on a co-primary basis. In Region 1, this band is allocated to fixed and fixed-satellite (space-to-Earth) services on a co-primary basis and to mobile service on a secondary basis. Domestically, this band is allocated to fixed and fixed-satellite (space-to-Earth) services on a co-primary basis.

Significantly, NGSO FSS systems may utilize these bands under the FSS allocation, so long as they comply with the obligations of Radio Regulation S22.2 of the ITU Radio Regulations with respect to the causing of unacceptable interference to co-frequency GSO

FSS systems. However, there is no current provision in the U.S. Table of Frequency Allocations for the subject C-band frequencies that explicitly references NGSO FSS operation. If the Commission is to permit the operation of NGSO FSS systems at Ku-band, as it is currently proposing, it should also make provision in its rules that NGSO FSS satellites can operate gateways at C-band consistent with ITU regulations.

3. The Commission Should Initiate a Rulemaking Proceeding to Allow NGSO FSS Gateway Operation at C-Band

Virtual Geo submits that NGSO FSS gateway operations should be permitted at C-band provided that NGSO FSS systems operating in this band would impose: (i) no noticeable degradation to the quality of service or availability of GSO satellite operations and terrestrial links, and (ii) no operational constraints on GSO satellite and terrestrial operators. Virtual Geo observes that the VGSO-type orbits proposed to be used by VIRGO™ will permit such operation without causing degradation to GSO and terrestrial systems in the C-band or constraining future growth of these systems.

Moreover, permitting access to the C-band spectrum for gateway links for non-interfering NGSO/VGSO FSS satellite systems would promote the advent of new satellite service to the public, increase competition in the broadband services market without having to dedicate additional spectrum resources to this end, and promote innovative techniques to make more efficient the use of scarce spectrum without putting existing or future users at risk. For these reasons, the Commission is urged to permit the operation of VGSO-type NGSO FSS systems in the C-band for gateway links.

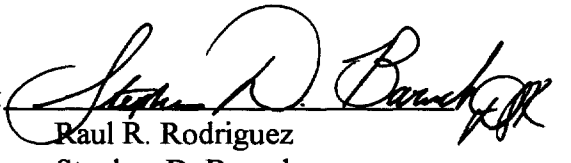
Specifically, Virtual Geo requests that the Commission adopt any rule modification that may be necessary to allow VGSO-type NGSO FSS gateway uplink operations in the 5.925-6.725 GHz band; and to allow VSGO-type NGSO FSS gateway downlink operations in the 3.7-4.2 GHz band.

III. CONCLUSION

For the reasons set forth above, Virtual Geo requests that the Commission initiate a rulemaking proceeding to make available the 5.925-6.725 GHz and 3.7-4.2 GHz bands for gateway operations by NGSO FSS systems. By making the C-band spectrum available for VGSO-type NGSO FSS systems, the Commission will serve the public interest by allowing these systems to introduce efficient and superior service, in addition to additional FSS competition, in the U.S. market and internationally.

Respectfully submitted,

VIRTUAL GEOSATELLITE, LLC

By: 

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April 27, 1999

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CERTIFICATE OF SERVICE

I, Lorene J. Miller, hereby certify that a true and correct copy of the foregoing "Petition for Rulemaking" was this 27th day of April, 1999, sent by hand, to the following:

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